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Public Education at The Wilma H. Schiermeier Olentangy River Wetland Research Park: Outdoor Signage

Margeaux Apple; Krista Early; Ethan Rhodus; Jeff Robbins; Kelsie Senuta

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Campus as a Living Laboratory is a collaborative program of OSU Energy Services and Sustainability
Aparna Dial, University Director, Energy Services and Sustainability
Dial.15@osu.edu

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Executive Summary

Our paper focuses on updating the signage system at the Ohio State University's Wilma H. Schiermeier Olentangy Wetland Research Park. The current signage is outdated and reflects the message that the Wetlands facility wished to project in its earlier days, mostly of donor support and initial research. Now that the Wetlands is a more established facility, we propose signage to focus more on the educational experience that visitors have throughout the park. Our project focuses on optimizing the visitor experience through three main components of signage: placement, design, and materials. Adding additional signage in strategic locations and making adjustments to existing signs to establish a flow through the pathways visitors take is the main focus with placement. The placement ties in with the design. Creating a consistent pattern for the signs to entice people with identification signs and educate them with informational signs is key. In addition to placement and design, materials for the signs are important. We propose both conventional and sustainable options for sign materials that can endure weathering and vandalism.

There are potential barriers to implementing the signage in the manner suggested by our research. These barriers include: budgetary constraints, increased degradation to the wetlands environment from increased visitation, and overcrowding that could take away from individual experience. Addressing these issues is important to the success of the new signage system. Our project is only the first step in the process of increasing environmental education at the Wetlands. With that in mind, we suggest to future research groups different areas to expand on, including the use of technology, such as QR codes, in order to engage a wider audience.

The Wetlands is transitioning into a new era and our project offers many exciting opportunities to engage and incorporate more visitors. Our research is a vital first step in determining how to most effectively harness this exciting opportunity. With future work, a new, more effective signage system will be able to help communicate the message the Wetlands wishes to share with everyone.

Introduction

Over the twenty years since the facility was founded, the Wilma H. Schiermeier Olentangy River Wetland Research Park has developed significantly. When first established, the facility focused its signage on acknowledging its donors and publicizing its establishment. Unfortunately, as the facility has changed its focus towards research and developing awareness, the informational signage has not kept up. The Wetlands Research Park still has the original signage that was installed twenty years ago with its initial construction, which does not include material on wetlands education.

The Wetlands Research Park now wishes to target a wider audience of multi-faceted visitors. Lynn McCready, the Interim Director of the Wetlands, has discussed with our group how the facility is in a period of transition. She wants the facility to incorporate more environmental awareness principles into its educational experience. The Wetlands do not have the resources to provide a full-time education staff responsible for interacting with their visitors. Due to this limitation, the main component of their educational resources is the outdoor signage throughout the park. Our group feels a stronger focus on each sign will better enhance the educational experience for the visitors.

Our plan for new signage includes three main research aspects that, when combined, establish the most efficient and exciting way to educate a wide audience with a variety of content at different locations within the park. The first topic involves the strategic placement of signs. This poses the question: "Where should the sign be installed?" Currently, the signs at the Wetlands do not follow a specific path and would benefit from better placement. When determining the placement of the signs, we must consider the paths that visitors use to navigate through the park. The second topic of our research focuses on the display of each sign. This topic poses the question: "What should be on the sign?" The design focuses more specifically on the amount of words, size of text, color, and other key characteristics. While the design and placement of a sign are separate categories, they must be considered as complementary in order to maximize effectiveness. The placement of the sign, inside or outside the facility, will determine the appropriate design based on the function. The way that information is

displayed depends on where the sign is placed and what the visitors will be doing when they see this sign.

The third topic emphasizes the materials used to construct the signs. This poses the question: "What should the sign be made of?" This aspect focuses on determining the types of materials that provide the most sustainable signs. In the past, the signage at the wetlands has experienced vandalism and other problems due to weathering. Many options are available that might work for the Wetlands; however, one must be chosen that would not only be the highest quality, but also the most cost effective. Because the Wetlands Facility has a limited budget, economic feasibility must be considered as well. Taking into account placement, design, and materials, a cost-benefit analysis will be calculated to properly demonstrate the best overall option.

Placement

An efficient signage system contains a combination of careful design and placement of each sign (Dwight, 2008, p. 40). This section will focus on the placement aspect of a signage system, and apply the most successful methods to the Wetlands Research Facility. The placement of a sign is a vital factor in successfully communicating information. Before discussing proper placement, we must first split up the signs into categories. Multiple types of signs exist; however, we will be employing two general categories at the Wetlands Facility: Identification Signs ('A Signs'), and Education Signs ('B Signs'). In *Signs of the Times*, Dwight defines an identification sign as a sign that identifies the name and location of a given facility (2008, p. 39). For our purposes, A Signs are intended to attract and inform visitors of the presence of the Wetlands. At all major entrances, there should be an identification sign to prevent confusion (McLendon, 1982, p. 65). The second category of signs is comparable to information signs, which Dwight defined as: signs that offer facts (2008, p. 39). However, our signs are intended to do more than just this; they are meant to provide information and educate visitors. We also thought it important to incorporate another dimension into these signs: capturing the attention of the public, which will be discussed more in the design section. The B Signs will be interspersed throughout the Wetlands

Research Park. We will use the terms A Signs and B Signs for the sake of simplicity in the remainder of the paper.

The two most important features of effective sign placement, minimizing obstructions and maximizing visibility, go hand in hand (Nassar, 2007, p. 799). In order to meet these two requirements for both A Signs and B Signs, there are a number of factors that must be considered. The first factor is the zone of legibility which, according to Nassar, is an imaginary zone where the on-looker is able to read the sign (2007, p. 802). Determining this zone requires knowledge of the legibility distance and the expected speed of traffic. In order to maximize legibility, signs should be placed closer to the path as speed decreases (Nassar, 2007, p. 802). The minimum distance a sign should be from the path is six feet (McLendon, 1982, p. 65). When a sign is placed on or near a traffic flow, the sign should be placed at a 90 degree angle to the path itself to maximize legibility for the greatest number of pedestrians (McLendon, 1982, p. 65). This would also eliminate the need for a sign on either side of the trail by allowing the possibility to place a message on both sides of the sign (McLendon, 1982, p. 20). The next factor is avoiding possible obstructions. Signs must not be placed in an area where they will be obscured by any object. The type of obstruction will be unique for each setting or environment. At the Wetlands, possible obstructions include shrubbery or trees.

Currently the Wetlands Facility is lacking in A Signs, although they do have three good examples. Two are placed along the driveway to the parking lot, which is one of the most important places for an identification sign (McLendon, 1982, p. 66). The other is at the main entrance of the building. These signs will stay as they are; however, there are other entrances to the facility that are not accounted for. These include the two entrances to the Wetlands from the bike path, as shown on the map in Appendix A. The question that arises is: should these locations be considered major entrances? Considering the high volume of walkers and bikers on the bike path, we concluded that these should count as major entrances.

B Signs are currently interspersed throughout the Wetlands in various areas, but could use some improvement. For these signs the most important factor in choosing placement is maximizing visibility. As Dwight says, a sign should always be where it is

needed; it should never have to be searched for (2008, p. 40). In most instances, the current placement is satisfactory for these purposes. For example, the signs in and on the path leading up to the Sandefur Wetland Pavilion as well as those off the bike path are sufficient (see map in Appendix A). These signs are easily accessible via the path and easy to find. Other signs, however, are placed randomly throughout the Wetlands and are difficult to access. One, which is labeled on the map with a red X, must be accessed by going off the path and behind the fenced-in mesocosm compound. Not only is this not easily accessible, and there is no indication that this area is open to the public. This sign serves no purpose, and it should be removed and replaced at a more accessible location. The sign at the mesocosm presents another issue regarding placement. As seen in Figure 1, the mesocosm is not very attractive to onlookers, and it is important to have a sign identifying its purpose so that visitors are not turned away by its appearance.

Figure 1: Mesocosm Compound at the Wetlands

Currently, the sign is on the south side of the structure near the pavilion. We propose to replace this sign with one closer to the northeastern side near the trail, in order to be more exposed to passers-by.

Another important aspect of signage placement involves the idea of wayfinding. Wayfinding is the process that visitors take in order to navigate appropriately through a given space. According to Dwight, a successful signage system must incorporate wayfinding efficiency in order to reach its full potential and attract new visitors (2008, p.40). We believe that this could be successfully implemented in the Wetlands with a set

walking route. This set route will give visitors guidance, as opposed to them roaming the facility and likely missing some of the signs. Our goal is to incorporate wayfinding in the Wetlands by placing the signs in an order that follows a set path. The new signs will be placed along the path, as shown on the map. This set path will force visitors to pass each sign, making it more likely that they will read them as they walk through the Wetlands. In order to implement this walking route successfully, a map must be available to visitors upon arrival. Ideally, this map would include the paths, as shown in Appendix A, as well as the placement of each sign and a corresponding number. We propose the two overlapping loops shown on the map to serve as the set walking trails (See Appendix A).

Taking all of this information into account, we propose fifteen new signs being placed at the locations marked on the map in Appendix A. The A signs are marked with a yellow rectangle and the B Signs are marked with a red dot. The three A Signs along the main entrance will not need to be replaced. The two walking trails are marked with orange and pink lines for the big loop and little loop, respectively.

Design

The signage system at the Olentangy Wetlands Research Facility is currently disorderly and confusing. The system that is in place offers limited opportunities for the public to learn about the environmental messages the facility wants to communicate. Education within the environment requires that the setting and the message be intertwined. The Olentangy Wetlands Research Facility is shifting their focus towards allowing the visitors to become engaged with the ideas presented (Falk, Heimlich & Foutz, 2009, p.17). In order to reach this goal, the designs of the signs must be re-evaluated.

The successful design and layout of the different signs at the Wetlands depends on the different graphic elements, as well as the placement of the specific signs within and around the Wetlands. The appearance of these new signs needs to be dramatically different from their current condition. All of the Wetlands' signs will need to be completely refaced in order to achieve the new goals of the facility. These goals include successfully educating the public about wetlands, influencing their eco-sensitivity, and promoting positive environmental behaviors. The unsatisfactory signage has hindered

the public's ability to learn about wetlands and their benefits. The sign system needs to be rethought to include the distinctions between the two styles of signs and to differentiate between the purposes they serve. The more thought that is put into the design of the signs, the more effective the signs will be at educating the public (Ambrose & Paine, 1993, p.71). The necessary aspects to consider when improving the signage are: the colors that are used, the amount of white space on each sign, the size of the font, and the typeface for the message. All of these aspects contribute to the formatting decisions that will help serve the Wetlands by improving the take-away message that the public retains from their visit to this site.

The Olentangy Wetlands Research Facility will benefit from new visual aids both outside and inside the park. A pleasing visual design is one of the first things that will attract visitors to any park or public area. Generally, the color scheme on the signs should catch visitors' attention before any other aspect of the design. According to Mollerup, the function of color is a way to make the world even more visible (2005, p.161-164). The A signs need to show better contrast with the colors that are used. In their current condition, these identification signs do nothing to inform the public about the Wetlands. If contrasting colors are used during the creation of the signs, the signboard will be differentiated from its natural background as well as the content of the sign (Mollerup, 2005, p.164). The B signs need to be approached as education signs. The contrast with colors does not need to be as drastic as the A signs, but it needs to be eye-catching enough to make people want to stop and read the signs.

After the color scheme, the typeface and the font size are the next most important elements. The typeface for the Wetlands needs to be limited to two different typefaces. Using only two different typefaces is the common rule because it prevents the text from becoming too confusing to understand (Thompson, 1996, p.56-57). Generally, the decision needs to be made between a **sans-serif** typeface and a **serif** typeface. Body text, or the content of the sign, is usually displayed in a serif font while titles and headlines are best displayed using a sans-serif font (Thompson, 1996, p. 56-57). The education signs that will be placed throughout the facility should have "a capital letter height of one inch while the lower case letter height should be about 5/8 of an inch" (United States, 2006, p.54). A general rule from the U.S. Bureau of Reclamation states

that 1 inch of text can be read from 50 feet away (2006, p.54). All of these design aspects along with white space can help determine the final look of the sign.

White space is used to accentuate both the blocks of text as well as the graphic elements that help to convey the message of the Olentangy Wetlands Research Facility. Limited white space on the information signs will make the sign appear as one mass of text, which has the potential to intimidate the reader (Thompson, 1996, p.51-52). If the Wetlands have too much unbroken text on their signs, the readers will avoid spending time learning the message that the sign conveys. On the B signs, the use of photographs and graphic images can suffer from either too much white space, which will make the dominate focus be on the image, or too little white space, which will confuse the readers. Examples of A and B Signs are shown in Figure 2 and Figure 3 respectively.

The Wetlands must apply the graphic elements that have been discussed thus far to improve the quality of both types of signs, as well as the messages that the public will receive. The descriptive text of the signs should be concise and prove their point clearly without getting into too much scientific detail (United States, 2006, p.40).

Figure 2: Example of A Sign Design

Figure 3: Example of B Sign Design

Materials

Conventional options

Since our signage will be outside, we have to construct our displays out of durable materials that will be able to withstand the elements of nature. The current signs at the Wetlands are made of metal posts and frames with a Plexiglas surface that houses a piece of paper with a printed image. These signs are waterlogged easily and offer little protection from the environment. The Plexiglas is often scratched or painted on and therefore a new, more maintainable surface needs to be implemented. The Bureau of Land Management published a *Sign Guidebook* that describes the placement and materials of signs that function appropriately. The *Sign Guidebook* lists materials like plywood, plastics, wood, fiberglass, and other metals. Each of these materials comes with specific costs and benefits. The metals and fiberglass are more resistant to weathering, but their cost is greater. While the woods and plastics are inexpensive, they would require more maintenance. The current Plexiglas material is a hard and rigid material that breaks easily but helps resist abrasion. Plexiglas is also a great choice for layering over other materials (*Sign Guidebook,* 2004, p. 47). However, this surface has faulty seals that let water into the signs and ruin the ink printed on the paper. To counter these faults, a fiberglass-embedded image would be beneficial. This material is good at withstanding environmental stressors as well as scratching and impact (*Sign Guidebook,* 2004, p. 49). The fiberglass is also easy to copy in case a replacement is needed. The initial cost of the signs individually can be expensive but buying multiple signs in one setting will reduce the price (*Sign Guidebook,* 2004, p. 49). There may be a multitude of different materials used throughout the park to help match the need of a designated area.

Through the Wetlands signage, three of the most applicable options are fiberglass embedded signs, high pressure laminated signs, and anodized aluminum signs. Fiberglass signs, as shown in Figure 4, have been around for over thirty years and they have advanced over time. The fiberglass/epoxy resin is imbedded into a special paper made with UV inks that is then secured between two fiberglass sheets. The benefits of this material are that it is relatively affordable in the long run, due to its easy replacement and long life span. The initial cost for one of these signs is around $350. The fiberglass

is relatively weather-proof and, in most circumstances, comes with a ten-year warranty (Hazlitt, 2002).

Figure 4: Example of Fiberglass Sign

Source: https://www.segd.org/static/microsites/messages/vol25_issue4/expo_showcase_issue4_vol25.html

The high-pressure laminates, as shown in Figure 5, allow for more creative opportunities due to an array of different color options and different layering opportunities that are not common with other sign materials. The laminates are paper prints, melamine sheets, and phenolic resin. These materials are layered together and pressed at high heat and pressure to combine into one piece of plastic (Hazlitt, 2002). This type of sign is comparable to the embedded fiberglass but the price range is dependent on the size of the sign, running from $300-$700. There is generally a ten-year warranty on these signs as well (Hazlitt, 2002).

Figure 5: Example of High-Pressured Laminate Sign

Source: http://www.fleisherproducts.com/signs/exterior-dimensional-signs-san-diego

The last considerable option would be to use anodized aluminum, as shown in Figure 6. Metals like aluminum are very tolerant to different climates and precipitation.

These signs cost, on average, $125 to $250 per square foot of sign. They would stand up to the radical weather changes in Columbus and last for an extended period of time. The downside to aluminum is that it can be easily scratched and impacted, and the color choices for these signs are not as vibrant as for the other choices (Hazlitt, 2002).

Figure 6: Example of Anodized Aluminum Sign

Source: http://www.bluepondsigns.com/featured-project.html

Sustainable options

A number of the potential criticisms of our project have to do with the environmental impacts. In a park that clearly values the environment, the message of sustainability and environmental responsibility should be reflected in every aspect of the park, including the signage itself. This section will address criticisms and make suggestions for incorporating sustainable options into our project. There are a number of places where the environment could be impacted by our decisions.

Choosing a firm to create the signs comes with potential environmental implications. A company has the ability to be sustainable in the products they make and the process in which they make them. One such company that has an environmentally friendly product and process is the Canton, Ohio based EnviroSigns. EnviroSigns' DuraReader interpretive sign is a viable option for our project. This product has 100% post-consumer content and offers a ten-year limited warranty. The DuraReader is graffiti, UV, burn, and abrasion resistant, and will not delaminate (EnviroSigns, 2013). An example of the DuraReader can be viewed in Figure 7. Along with having an environmentally conscious product, EnviroSigns is committed to sustainability in every

aspect of their business. For example, EnviroSigns' webpage is 100% solar powered. Also, they recycle as much plastic, metal, and hybrid scraps as possible, and donate to local arts programs (EnviroSigns, 2013). Employing a company that incorporates green initiatives would reflect well on the Wetlands facility as well as Ohio State University.

Figure 7: Example of DuraReader Interpretive Panel

Source: http://envirosigns.com/interpretive-signs/durareader-interpretive-panel

After contacting EnviroSigns for a quote on fifteen signs, they were able to give us an estimate of $5,245.86. This cost includes eleven to fifteen 1/8-inch thick, 18 by 24-inch exterior phenolic panels and powder-coated extruded aluminum angled frames with posts for in-ground installation. This estimate also includes shipping and handling fees. Individually, the sign panels cost approximately $167.46 each. The posts and frames, which are sold separately from the panels, are priced at $282.62. For further information on the estimate from EnviroSigns see Appendix B.

If sustainable options are not viable or cost-effective in comparison to traditional signage, there are other ways to ensure environmental consideration. Looking at the business models of a company is important for our process. A company like Pannier Graphics, for example, makes traditional fiberglass embedment and has sustainability at its core. Pannier Graphics uses water-based inks that are non-toxic and eliminate volatile organic compounds (VOCs) that can be found in other high-definition printing processes (Pannier Graphics, 2012). After speaking with a representative from Pannier Graphics, we were given a quote for twelve signs at $5,645.00. This price includes twelve 18 by 24 inch fiberglass embedded panels, twelve single pedestal exhibit bases, and shipping and

handling fees. For more information on the estimate from Pannier Graphics see Appendix C.

Making visitors aware of the park's commitment to the environment is important. If the Wetlands decides to implement signs that are environmentally conscious whether through recycled content and water-based inks or by hiring a firm that has sustainability at its core, we think it may be valuable to have a sign about the signs. Recognizing the efforts of the firm enlisted and the Wetlands to be eco-friendly through and through could have many benefits. Spreading awareness through signage of the Wetlands' good intentions could attract donors, encourage other Ohio State entities to apply sustainable practices to their facilities, and highlight a company that has sustainability at its core.

Replacing signs means potential waste. There are options we would suggest for dealing with this issue. The first option is reusing the signposts. According to Jamie Inks, a representative from EnviroSigns, sign panels, signposts, and frames for the DuraReader interpretive signs are purchased separately. A potential cost saving and materials salvaging endeavor could be to forgo purchasing the signposts and reuse the current posts. This option is viable if the dimensions of the new signs are compatible with those of the old signs. The additional cost for each 18 by 24-inch signpost is approximately $25.69 per sign. Forgoing purchasing the posts would not only be cost saving, it would also eliminate unnecessary waste from the project. The second option for avoiding waste would be to recycle as much materials as possible. Depending on local recycling facilities, we could potentially divert much of the material from landfills. The current signs have metal, plastic, and hybrid components that would require different recycling processes. Recycling the metal posts could also be a potential moneymaker. Columbus has many firms that are in the business of recycling.

There are many possibilities to make our project as sustainable and low impact as possible. Responsibly handling the current signs and enlisting a company with sustainable values are the two key areas where decisions made will have positive repercussions. By presenting the option to go about implementing new signage in the most environmentally responsible way, we hope to show the potential benefits of these actions.

Potential Issues

When focusing on enhancing the educational opportunities of the visitors to the Wetlands Research Facility, a few considerations must be taken into account. A strong focus of the Wetlands is to attract more visitors, but the Wetlands must also assess the impact of ecosystem degradation that occurs with increased visitation. Taking into consideration the health of the ecosystem at the Wetlands Facility is important, but it is not the only factor when making decisions. One of the main goals that the Wetlands Director, Lynn McCready, discussed with our group is that she wants to reach a wider audience. She wishes to express the importance of wetlands and their vital role to everyone that visits. While some people may oppose attracting more people to the Wetlands Facility for the well-being of the ecosystem, it is our goal to educate as many people as we can about the importance of wetlands with minimal impact on the surroundings. One of the main concerns with increased visitation is the amount of foot traffic the Wetlands will receive. As the number of visitors increases, the total foot traffic will also increase. As the amount of people traveling through the Wetlands increases, the likelihood that people will leave the designated paths also increases. When hikers do not follow the designated trails, they can cause serious issues to vegetation and soil conditions. A study from the US Forest Service conducted by Leonard et al. focused on the impacts hiking has on trampling forests. They concluded that trampling stress impacts all species. While all species are affected, certain species are more impacted by trampling than others (1985, p. 2).

Protecting vegetation growth is essential at the Wetlands. In trying to help minimize visitor impact on the facility, we suggest having guidelines for basic behaviors that visitors should follow while walking, running, or biking. Following ethics similar to those established by the Leave No Trace organization, we plan to educate users on the importance of their actions. Having these guidelines at the start of major pathways would be appropriate for targeting people first entering the trails. These guidelines can be viewed on our example sign located in Appendix D. There are a variety of ways these guidelines could be presented to visitors. The environmental behavior of visitors would be positively influenced by having a map system that indicates major trails, signs along the way, trash and recycling containers, and the basic expectations. This may be a large

illustrated map at major starting points that would help gain the attention of visitors. Providing either handout fliers or a way they could access this map on a smartphone device would be helpful in reminding visitors as they go around the facility.

Another factor that occurs with increased visitation to a facility is overcrowding. Overcrowding can occur at a specific time of day or during a certain season. The issue has impacts both on the ecosystem and on the experience of the visitors. Imagine the feeling of coming with your family to visit a park for the first time only to find it completely packed with other people. The negative emotions you might have just associated with this park are extremely important when trying to understand the experience visitors have in an overcrowded setting. The Hong Kong Wetland Park has looked into ways to best manage overcrowded situations. Their recommendation is to monitor the crowd traffic during peak operating seasons. Allowing for a time-slot system that limits the maximum number of visitors at any one time permits a healthy balance of traffic benefiting both the visitors experience and the impact on the ecosystem (Tsang et, al., 2011, p. 135). A specific time-slot system could be developed based on information from the Wetlands Facility on traffic patterns of visitors.

Currently, overcrowding does not seem to be a large issue at the Wetlands but is a strong recommendation to consider for the future. Periodically there are large service days at the Wetlands consisting of up to 100 volunteers. When larger events like these are scheduled, applying a maximum number of visitors in any one area may be helpful in balancing the visitors experience with their impact.

Another issue that must be addressed is funding. While the estimate from EnviroSigns is a great deal, it may cause an issue if the Wetlands Facility is the only source of funding the project. When speaking to Lynn McCready, she mentioned updating the signage is a project that could be incorporated into the budget. If the project total is too expensive for the current budget, alternative funding sources exist that would be available for our proposal. The main alternatives are applying for grant funding from two primary programs: Ohio State University Extension's CARES Seeds Grants Program and US Environmental Protection Agency's Environmental Education Grants Program. The OSU Extension's program supports outreach and engagement programs that impact both the community and the university. This grant applies to the project due to our wish

to engage and educate the community about environmental issues that apply to the Wetlands. The US EPA's Environmental Education Grants also focus on developing awareness for environmental issues. This program helps develop a sense of environmental stewardship in the community, a theme that the Wetlands shares.

Future work

One of the challenges of having a large audience of visitors is finding a proper balance in subject matter of the signage. One area of study could focus on the possibilities of using technology as a way to reach a wider audience at the Olentangy Wetlands. Our group proposes using QR codes at the Wetlands to allow for specific content for a desired audience. A QR code is a 2-dimensional bar-code that when scanned with a smartphone device is virtually linked to any electronic form of information. This would permit people to use their smartphones to guide them through additional educational material on each sign. The criticism of this idea would be that QR codes are not popular enough in the United States. If this statement is true, then the argument is why would someone waste space on the signs including them?

To understand if this is a valid assumption, knowing the effectiveness of QR codes in an educational setting is important. If they are to be included on the signs, QR code usage and trends are important to understand. If the research supports the claim that QR codes are not effective, it could continue with the project but simply change the focus of the paper to looking at interactive, hands-on signage. A future project would be able to recommend the best forms of interactive displays. Another thought could be having the Wetlands as an experimental facility for researching visitor behavior towards QR code usage on signs. Including an evaluation portion in the project would give adequate defense towards arguments against QR codes. If the evaluations showed the codes to be unused, future groups could recommend their removal.

Further groups could also focus more on specifics of implementing a new signage system. Projects might include determining the best method of funding the project and applying for the grants mentioned earlier. In addition to the grant writing, designing the content of each sign would be necessary in sharing the implementation of the educational signage system.

Conclusion

The signage at The Wilma H. Schiermeier Olentangy River Wetland Research Park is in need of improvement in order to reach its full visitor potential. The three main areas of focus for our new signage system are placement, design, and materials. The combination of proper placement and design will allow for the best possible visitor experience. The best choice in materials will provide weather resistant signs that will last for years to come. A sustainable option, such as Envirosigns, would allow the Wetlands to illustrate what it truly means to be a sustainable facility. Our proposed placement, trails, and design will not only draw in more visitors, but will also allow for their maximum enjoyment and educational experience. It is our hope that the implementation of this new signage will attract more visitors and leave them with more knowledge of the importance of wetlands, as well as a heightened awareness of environmental issues in general.

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Appendix A: Map of the Wetlands

Appendix B: EnviroSigns Estimate

Estimate

EnviroSigns, ltd
Billing/Remit To: PO BOX 450
WOOSTER, OH 44691
ph. 888-492-5377
fax 888-492-5377
email: sales@envirosigns.com

Estimate: 897155

Printed 10/18/2013 1:17:24PM

Created Date:	10/18/2013 1:16:46PM	Prepared For:	Ohio State University
Entered By:	Jamie Inks	Contact:	Margeaux Apple
		Address:	Accounts Payable 1800 Cannon Drive Columbus, OH 43210
		Email:	apple.38@osu.edu
		Phone:	(216) 323-3455

Intepretive Sign Options for Wetalnds Area

	Product	Qty	Sides	Height	Width	Unit Cost	Item Total
1	DuraReader 1/8" 18x24	11	1	18	24	$167.4545	$1,842.00
	Color: **Font:** Includes Discount: ($325.05)						
	Description: 1/8" Exterior Phenolic Panel - HPL embedded with high quality 12 color digitally printed graphics- shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant - 10 year limited warranty - 100% post consumer recycled core!						
	Text:						
2	EnviroReader	11	1	18	24	$148.5455	$1,634.00
	Color: **Font:**						
	Description: Shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant clear, non-yellowing 10 year material embedded with high resolution graphics - 3 year warranty IMPORTANT! Enviroreader panels require a frame with a backing (our pedestal-style EnviroFrame, our NPS Style frame, or your frame) Design Note: Do not put any logos, photos or text closer than 1-1/2" from edge of sign or the graphics and/or text may be covered by the frame edging						
	Text:						
3	DuraFrame w/Post(s) 18x24	11	1	18	24	$282.6236	$3,108.86
	Color: Black **Font:** Includes Discount: ($270.34)						
	Description: Powder-coated extruded aluminum angled (30 or 45 degree) frame with post for in-ground installation (Surface mount option & additional posts available at an additional charge) ISO 9001-2000 certified. Up to 10% post-industrial recycled content.						
	Text:						
4	NPS Cantilever 18x24	11	1	18	24	$428.4436	$4,712.88
	Color: Black **Font:** Includes Discount: ($409.82)						
	Description: NPS Style cantilever posts (2) & frame - powder-coated extruded aluminum. ISO 9001-2000 certified. Up to 10% post-industrial recycled content.						
	Text:						
5	DuraReader 1/2" 18x24	11	1	18	24	$264.0000	$2,904.00
	Color: **Font:** Includes Discount: ($649.00)						
	Description: 1/2" Self-Supporting Exterior Phenolic Panel - HPL embedded with high quality 12 color digitally printed graphics- shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant - 10 year limited warranty - 100% post consumer recycled core!						
	Text:						

Estimates are valid for 30 days

Estimate

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Estimate: 897155

Printed 10/18/2013 1:17:24PM

Intepretive Sign Options for Wetalnds Area

Product		Qty	Sides	Height	Width	Unit Cost	Item Total
6	In-Ground Pedestal 16x20	11	1	0	0	$140.6127	$1,546.74
	Color: Black **Font:**					Includes Discount: ($134.50)	
	Description: 60" tall powder-coated extruded aluminum single pedestal with 30 or 45 degree mounting plate & 3"x3" in-ground post. 2 piece construction. ISO 9001-2000 certified. Up to 10% post-industrial recycled content.						
	Text:						
7	DuraReader 1/8" 24x36	11	1	24	36	$306.5455	$3,372.00
	Color: **Font:**					Includes Discount: ($951.06)	
	Description: 1/8" Exterior Phenolic Panel - HPL embedded with high quality 12 color digitally printed graphics- shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant - 10 year limited warranty - 100% post consumer recycled core!						
	Text:						
8	EnviroReader	11	1	24	36	$292.5455	$3,218.00
	Color: **Font:**						
	Description: Shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant clear, non-yellowing 10 year material embedded with high resolution graphics - 3 year warranty IMPORTANT! Enviroreader panels require a frame with a backing (our pedestal-style EnviroFrame, our NPS Style frame, or your frame) Design Note: Do not put any logos, photos or text closer than 1-1/2" from edge of sign or the graphics and/or text may be covered by the frame edging						
	Text:						
9	DuraFrame w/Post(s) 24x36	11	1	24	36	$477.0109	$5,247.12
	Color: Black **Font:**					Includes Discount: ($456.27)	
	Description: Powder-coated extruded aluminum angled (30 or 45 degree) frame with two posts for in-ground installation (Surface mount option & additional posts available at an additional charge) ISO 9001-2000 certified						
	Text:						
10	NPS Cantilever 24x36	11	1	24	36	$530.1864	$5,832.05
	Color: Black **Font:**					Includes Discount: ($507.14)	
	Description: NPS Style cantilever posts (2) & frame - powder-coated extruded aluminum. ISO 9001-2000 certified. Up to 10% post-industrial recycled content.						
	Text:						
11	DuraReader 1/2" 24x36	11	1	24	36	$491.2727	$5,404.00
	Color: **Font:**					Includes Discount: ($1,625.25)	
	Description: 1/2" Self-Supporting Exterior Phenolic Panel - HPL embedded with high quality 12 color digitally printed graphics- shatterproof, graffiti-resistant (graffiti can be removed), scratch-resistant UV resistant - 10 year limited warranty - 100% post consumer recycled core!						
	Text:						

Estimates are valid for 30 days

Estimate

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Estimate: 897155

Printed 10/18/2013 1:17:24PM

Intepretive Sign Options for Wetalnds Area

	Product		Qty	Sides	Height	Width	Unit Cost	Item Total
12	In-Ground Pedestal 12x12		22	1	0	0	$125.9386	$2,770.65
	Color: Black	**Font:**					Includes Discount: ($240.93)	
	Description: 60" tall powder-coated extruded aluminum single pedestal with 30 or 45 degree mounting plate & 3"x3" in-ground post. 2 piece construction. ISO 9001-2000 certified. Up to 10% post-industrial recycled content.							
	Text:							
13	Design Not Included		1	1	1	1	$0.0000	$0.00
	Color:	**Font:**						
	Description: Design costs are not included in this estimate. However, Envirosigns offers OUTSTANDING intepretive design. Please let me know if you'd like me to revise this quote to include a design quote. This estimate is based on receiving files as per our design guidelines at http://www.envirosigns.com/enviroreader/designguide.htm - If we have problems with the received files - we will contact you to discuss solutions before going forward with file correction!							
	Text:							
14	PDF Proof		11	1	8.5	11	$0.0000	$0.00
	Color:	**Font:**						
	Description: PDF proof emailed. Last chance to check for layout, fonts & spelling before final print. The colors on this proof are not an exact representation of the final product. Lab samples are extra - typically $40/layout. Please contact me if you would like a lab sample.							
	Text:							
15	Paper Proof	*	11	1	8.5	11	$5.0000	$55.00
	Color:	**Font:**						
	Description: Paper proof of the scaled down layout. Last chance to check for layout, fonts & spelling before final print. The colors on this proof are not an exact representation of the final product. Lab samples are extra - typically $40/layout. Please contact me if you would like a lab sample.							
	Text:							
16	Wrapping & Crating	*	1	1	1	1	$335.0000	$335.00
	Color: .	**Font:**						
	Description: All items are bulk packaged for shipment. If you have specific packaging requirements they must be quoted separately. Our panels are wrapped and/or crated for maximum protection against shipping damage.							
	Text:							

Estimates are valid for 30 days

Estimate

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email: sales@envirosigns.com

Estimate: 897155

Printed 10/18/2013 1:17:24PM

Intepretive Sign Options for Wetalnds Area

Product			Qty	Sides	Height	Width	Unit Cost	Item Total
17	Shipping Charge	*	1	1	1	1	$295.0000	$295.00

Color: **Font:**

Description: PLEASE READ CAREFULLY . . .Go to http://envirosigns.com/shippingFAQ.pdf and see what we need to know to get an accurate shipping quote.

Shipping costs are estimated and could be more or less depending on when these actually ship. They are based on delivery to a business. Delivery to a residential address will be more.
It is important you give us the correct shipping address when ordering a job and let us know if this is a residential delivery or business delivery and a contact phone number must be included.

IMPORTANT! Some of the product comes via trucking company so your location would need truck access and a way to unload large skids if applicable. If you feel you will need a lift gate, we need to know that - the additional cost for such is generally about $250. This is the shipping companies additional charge - not ours - we have to pass that along.

As stated, Shipments to home address cost more so we need to know that as well.

all deliveries MUST BE INSPECTED upon delivery. Due to shipping regulations all damage not brought to our attention prior to 14 days after receipt cannot be replaced or repaired without charges.

Text:

Notes:

Line Item Total:	**$42,277.30**
Tax Exempt Amt:	**$42,277.30**
Subtotal:	**$42,277.30**
Taxes:	**$0.00**
Total:	**$42,277.30**

Deposit Required: **$21,138.65**

Company: Ohio State University
Accounts Payable
1800 Cannon Drive
Columbus, OH 43210

Received/Accepted By:

/ /

Estimates are valid for 30 days

V

Appendix C: Pannier Graphics Estimate

From: Heddaeus, Robin
Sent: Thursday, October 24, 2013 7:53 AM
To: 'apple.38@osu.edu'
Subject: pricing for wetland signs

Hey Margeaux-
It was nice to talk with you on Tuesday regarding the wetlands signs that you are working to redesign and install. We spoke about our fiberglass embedded signs and per our conversation, pricing follows…
12 24x18 fiberglass embedded panels $155.00 each
12 single pedestal exhibit bases $305.00 each
Shipping to Columbus. $125.00
We also spoke about 2 other larger entry signs but I was not sure what the size would be. Once you know that we can get some pricing for those too.
My pricing above is based on getting print ready files from you.
Please let me know that you have received this email and if you need anything else!
Thanks!
Robin

Robin Heddaeus . Market Specialist
345 Oak Road . Gibsonia, PA 15044
800.544.8428 x220 . 724.265.4300 (fax)
rlh@pannier.com . www.PannierGraphics.com

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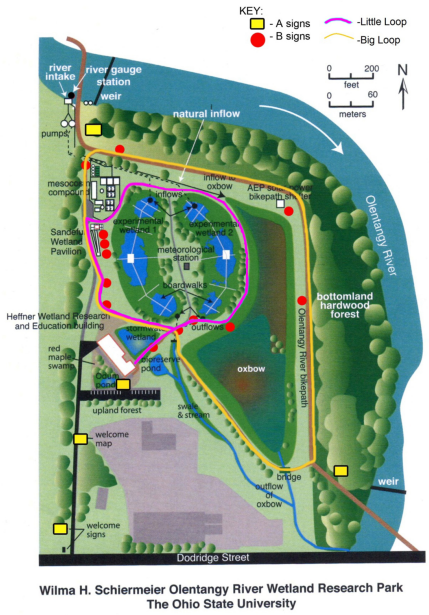
Appendix D: Example Guideline Sign

Know before you go



Wilma H. Schiermeier Olentangy River Wetland Research Park
The Ohio State University

Stay on the Path

Make sure as you are traveling throughout to stay on marked travels to reduce your impact.

Use the cans, not the trees!

Make sure to throw away any trash or recylables in desginated containers located on the map.

On the go?

Take our map and trail guidelines with you by scanning this QR code using a smart-phone device.